The Week In Engineering and Construction

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New construction curtailed by WPB conservation order

All work placed under strict control to forbid initiation of major private projects without specific approval. Major governmental and war jobs not affected.

The War Production Board, after months of internal discussion and dispute over terms, last week forbade the initiation of any major new construction without its specific authorization. The order, known as Conservation Order L-41 as finally released, reflected in general the views of the group in WPB which was pressing for a minimum of exemptions (*ENR*, March 19, p. 1). General nonresidential construction is only exempt if it costs less than $5,000; farm construction, if it costs less than $1,000, and residential construction if it costs less than $500.

Most important construction is unaffected by the order. Since last October when the former Supply, Priorities and Allocations board warned that in the future, priority assistance would not be granted merely because a project was half-finished, builders have hesitated to start any major job without a priority rating.

The order is aimed at two classes of work. A great many small house-builders have been scurrying around and getting material to build without ratings—either by paying a premium price or just by knowing the ropes. Individually this is a small matter, but it adds up to a lot of material. Without the order there was no easy way of telling whether a builder got his material legally or illegally. Now, the mere fact that he is building convicts him unless he has some form of authorization.

The other type of project affected is work that uses practically no critical material—as earth dams, levees, and masonry structures. In the past, such jobs have had no need of priority rating. In future they will have to receive authorization from WPB. They will be scrutinized just as closely as other projects, and must be of proven war importance. The order will be administered with an eye to conserving construction equipment and manpower as well as material.

A few projects of the pure earth moving nature such as unsurfaced roads, unlined irrigation ditches, and the like, are still not covered by the terms of the order. For the present they may go ahead without restriction, since by the technical definition they never begin. Eventually, even this sort of work is likely to be stopped, if it is not important, by the requisitioning away of its equipment.

Administration of the order will be handled by Sullivan Jones, who has been head of WPB's housing priorities section. This indicates a rather hard-boiled administration of the order, since Jones has been a strong proponent of putting the most drastic possible language into the order. It is expected that Jones will soon be transferred to a new construction bureau in the production division of WPB, which is to be headed by W. V. Kahler (See page 7).

Construction projects already started without priority ratings are permitted to

(*Continued on p. 4*)

Cities measure new WPB order effect

Reaction to the War Production Board's conservation order L-41 was immediate and in some cases painful. Virtually every community in the United States was affected, and official reaction was two-fold: First, to survey work in prospect, and second, to seek clarification of the status of work under way, or for which funds are already appropriated. Private contractors, home-owners and business men watched these moves for some inkling of their own position.

In Philadelphia, local newspapers surveyed the situation and concluded that the order may cause loss of employment to about 22,000 of the 75,000 persons employed in construction work in the metropolitan area. Additionally, they estimated that half of the city's 225 building contractors will be affected seriously—many of them being forced out of business. The city was dubious as to the status of a planned $18,000,000 waterworks modernization program, and of various street-widening and construction operations. However, the Home Builders' Association of Philadelphia hailed the order as "the finest ever issued", since it will permit full speed on construction of 18,000 defense housing units during 1942.

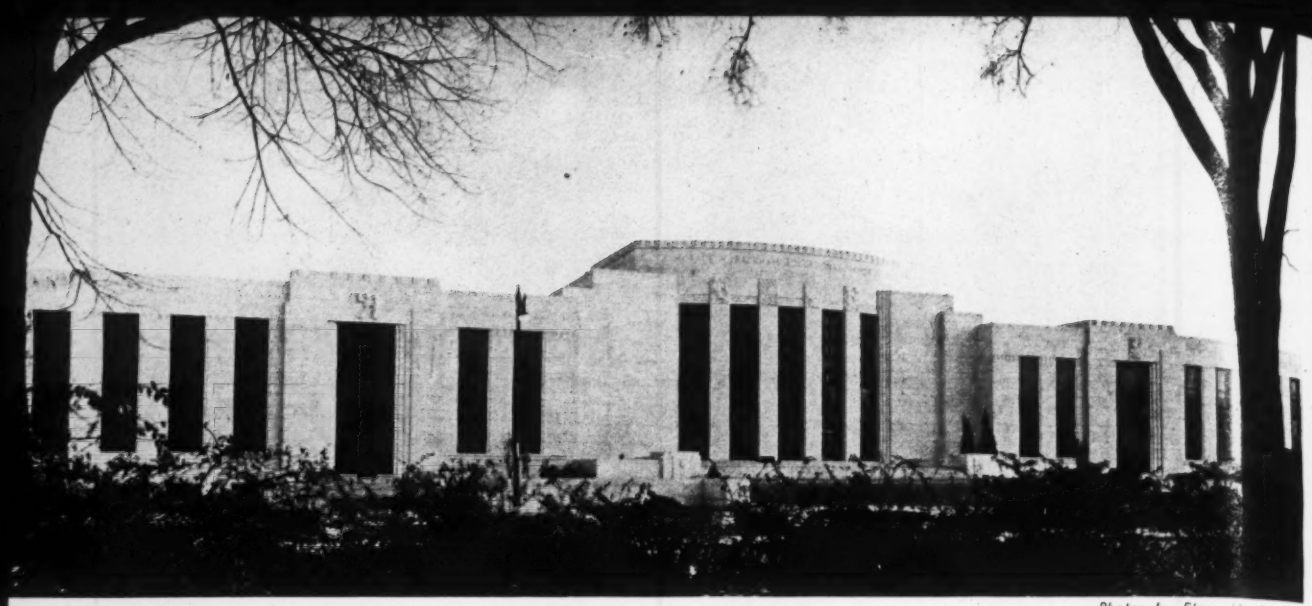
Washington, D. C., anticipated little effect due to the order, since practically all construction in the nation's capital can be linked in some manner with the war effort. James C. Wilkes, counsel for the Home Builder's Association of Washington, said the order would make available many construction workers now employed on non-defense work.

Tulsa, Oklahoma, builders also saw little prospect of interference with an extensive program under way there, since most of the small homes under construction are listed as "critically needed." In doubt, however, was the status of a $1,037,000 sewage disposal plant, a $60,000 remodelling of a downtown business building, and a $20,000 animal hospital already under construction.

Business men in Newark, N. J., sought clarification on a $1,000,000 four-story building, planned by the F. W. Woolworth Company. Tenants in a building now occupying the site have been ordered to move on expiration of their leases. New Jersey's Highway Department, however, said it could see no great prospect of interference, since it has announced a policy of no new construction work except that contributing to the war effort. Northern New Jersey small home builders, anticipating such an order, have pushed construction through the winter and representatives said they expected to be permitted to complete work now in progress.

Baltimore, Md., city officials gloomily estimated that city projects totalling $3,500,000, and including construction of water mains, conduits, street-car loading platforms, a new library, and sewer work, would have to be dropped.

In New York City, although no immediate estimate was available as to what city work might be stopped, builders said housing construction would be little affected. Most builders have already turned to war industry housing.



Photos by Elmer H. Astleford

Main facade of the new Horace H. Rackham Memorial building, which houses the technical societies of Detroit.

New Home of Engineering Society of Detroit

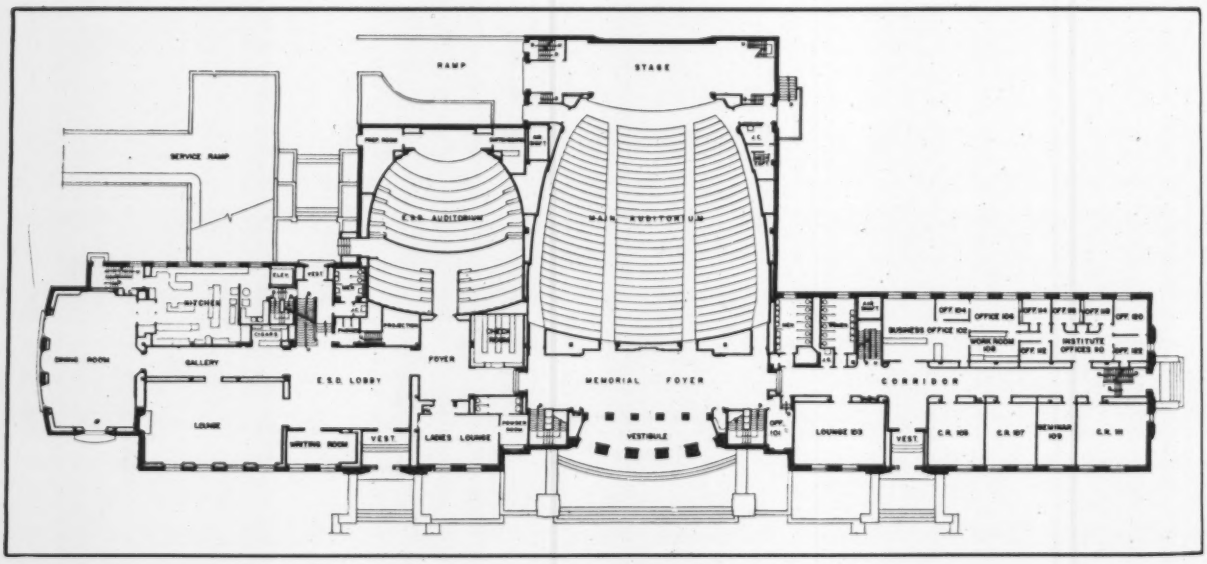
"Dedicated to help men live more useful and abundant lives," the Horace H. Rackham Memorial building, new home of the Engineering Society of Detroit, forms the third unit of an architecturally harmonious group of monumental buildings in the city's art center. In this single structure, are centered operating facilities for the broad programs of the engineering society, the Detroit office of the University of Michigan Extension Service, and the Institute of Public and Social Administration. The building was made possible through financial grants from the Horace H. Rackham and Mary A. Rackham Fund, and the structure is owned jointly by the Engineering Society of Detroit and University of Michigan.

Structurally the building is of reinforced concrete with an exterior of three basic materials, each of which has its own function in creating an impression of mass. White Georgia marble is used both for the facing of the building and for the ornamental sculpture. Dark granite forming the spandrels between the windows contrasts with the white marble, strengthening the bold fenestration. Cast bronze ornaments and bronze window frames enrich the dark masses of the structure.

Centered on a full city block, the building has a T-shaped plan with a frontage of 404 ft. along Farnsworth Avenue, and depths ranging from 65 ft. at the ends to 150 ft. in the center section. The west wing houses the activities of the university, while the east wing is occupied by the engineering society. The central section provides an entrance vestibule, a memorial foyer and the main auditorium, which is entered directly from the foyer. Thus, independent use of the auditorium is assured without interfering with the normal business conducted in other parts of the building.

Terraced approaches lead directly to the individual entrance of each wing along the Farnsworth Avenue facade and in turn are linked to the broad terraced court leading to the main auditorium.

First floor plan showing location of engineering society section at left in relation to university unit at right.



Inter-communication between sections within the building is possible on all levels.

Functional center of the building is the main auditorium, which is used jointly by the engineering society and the university. Seating capacity of the auditorium is one thousand.

Engineering society section

On the first floor, at the left of the main auditorium, is the engineering society unit with its individual auditorium seating 300 persons, and fully equipped for technical demonstrations and motion pictures. On this floor is located the ladies lounge, checkroom, writing room, men's lounge, and dining room with an adjoining kitchen and service elevator to the committee rooms on the second floor. To the right of the main auditorium on the first floor is the university section, occupied by business offices, class rooms and student lounge.

The second floor carries the upper part of the main auditorium, and directly over the first floor vestibule and foyer is the university library, while student class rooms occupy the balance of the right wing. The left wing houses the engineering society's administrative offices, a library including a large general reading room and a research room. To accommodate the varying needs of the affiliated technical societies and the many committees of public value of the society, meeting rooms of different capacities have been provided on this floor. Movable partitions make possible the transformation of several small rooms into one large unit whenever required.

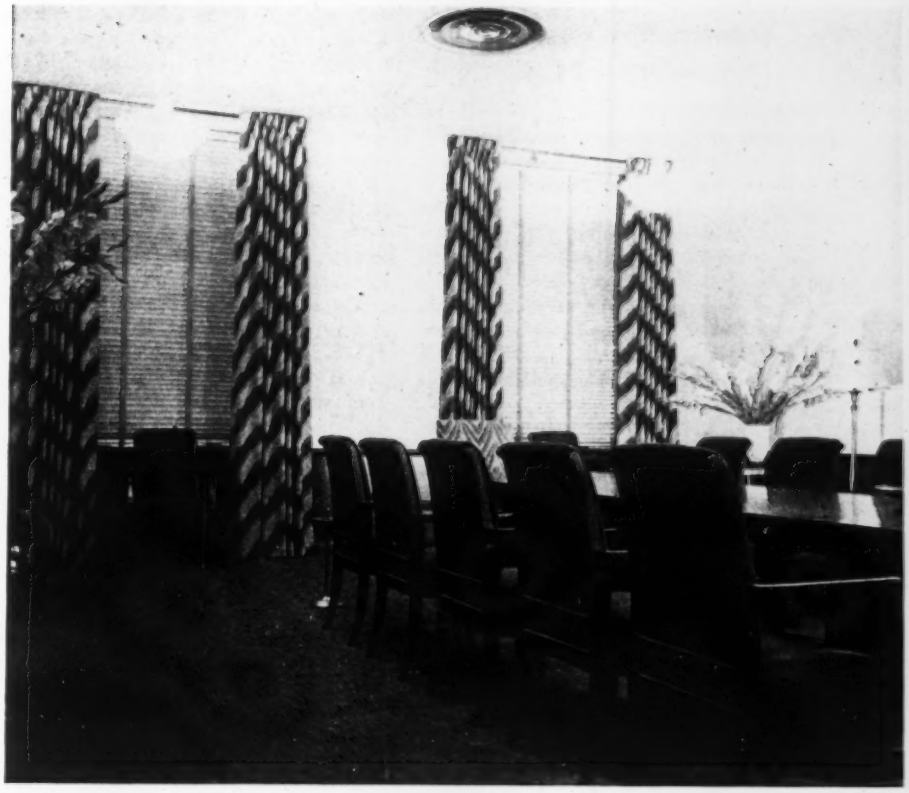
Supplementary facilities

A high basement contains a central banquet room with a seating capacity of 650 and is used jointly by the engineering society and the university. This room is equipped with built-in connections to the public address system on the first floor and can be used as a supplementary auditorium. In the engineering society section is located a bowling alley, game room, billiard room and a room for the junior section.

Ground was broken on July 1, 1940, the cornerstone was laid Dec. 20 of the same year, and the building was opened officially on Jan. 28, 1942.

Architects and engineers for the structure were Alvin E. Harley, Harold S. Ellington, C. Kenneth Bell, Malcom R. Stirton and Julian R. Cowin. The W. E. Wood Co., constructed the building.

Architects, engineers, the contractors, all have coordinated their efforts in producing a structure that from the standpoint of design, planning, engineering facilities, and construction is in keeping with technical advancements sponsored by the Engineering Society of Detroit, the affiliated societies and the extension service of the University of Michigan.



A typical single unit committee room on the second floor. Movable partitions permit the transformation of a group of smaller rooms into one large room.

An auditorium on the first floor with a seating capacity of 300 has been provided for the exclusive use of the affiliated engineering societies.

WPB order curtails new construction work

(*Continued from page* 1)

continue—but of course are not entitled to any new priority assistance unless they can make a showing of importance. To "begin construction", according to the order, means "to initiate construction by physically incorporating into any construction material which is an integral part of the construction."

A good many builders are obtaining notarized photographs or other documentary evidence to establish that on April 9, their project did in fact conform to this definition.

WPB warns, however, that if the material situation becomes even tighter than it is, it may prove necessary to stop even projects now under way.

Other exemptions from the terms of the order are listed in the attached excerpt from the order.

Two methods for authorization

There are two ways of granting authorization for construction in the future. The project is deemed authorized if it now has or is granted in the future one of the following types of priority ratings: Certificates PD-3 or PD-3a, granted by a government procurement agency; Preference Rating Order P-14, covering shipways; P-19, issued in various forms to cover most construction projects; P-41, air transport facilities; P-46 utility construction; P-55 private defense housing; P-98, oil industry construction; P-10, housing remodeling, and P-115, expansion of canning plants.

Alternatively, if no priority assistance is required, the builder may file a form PD-200 and PD-200A with the local office of the Federal Housing Administration, requesting an authorization to build. Such applications will be scrutinized not only from the point of view of necessity, but also to determine whether the most economical use is being made of materials. WPB is considering issuance of an emblem to be posted on authorized jobs.

It is urged that no applications be made this month except in emergencies.

An appeals board is soon to be set up, to which appeal may be taken by builders whose applications have been turned down. It will be made up of the administrator of the order, Jones, and of a representative of labor and of the civil product branch of WPB which is interested in the project in question.

Where priority assistance is granted by the War Production Board, authority to begin construction will be issued by the Director of Industry Operations.

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Four communities plan water supply expansion

With war-born demand for water placing unprecedented strain on their facilities, four cities last week—like many others (*ENR*, April 2, p. 519)—considered plans for expanding their water services.

The town of Vine Grove, Ky., near Fort Knox, applied to the State Public Service Commission for permission to issue $11,000 in revenue bonds to aid in doubling the capacity of its water works. The application said the town's population, which was 822 in 1940, has doubled in the last two years. At St. Louis, Mo., the city council is considering a plan submitted to Max H. Doyne, director of public utilities, to link St. Louis and East St. Louis with a 16-inch water main across the Eads Bridge. Such a main would have a capacity of about 8 mgd. and could be used to transfer water in either direction in case of need.

Ogden, Utah, officials have announced they will seek assurances from the office of the director of the budget that he will approve plans for best methods of developing an additional city water supply. If assurance is received, the city will undertake a survey of potential sources. Construction of a $477,000 water improvement project at New London, Conn., started last week. The project calls for a pumping station and chlorination plant near Lake Konomac, two high level storage reservoirs, with capacity of 5,000,000 gallons, and the necessary force and discharge mains to be available for full utilization by December 2.

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Tacoma bridge replacement will be delayed

Burwell Bantz, director of the Washington State Highway Department, has announced that scarcity of materials and financial difficulties will preclude any hope of immediate construction of a new bridge over Tacoma Narrows.

He said, however, that department engineers are working on plans for a new and stronger structure, which will cost about $8,000,000 and will be a four-lane suspension bridge with trusses used as stiffeners instead of girders, as in the bridge that collapsed. The original structure cost about $6,500,000.

Construction Prohibited by War Production Board

Construction operations prohibited in Conservation Order No. L-41 issued by the Division of Industry Operations of the War Production Board are given in the following, which is section (b) of the order:

(b) *Prohibited Construction.* No person shall, after the date of issuance of this order, begin construction, or order, purchase, accept delivery of, withdraw from inventory or in any other manner secure or use material or construction plant in order to begin construction, unless the construction is within one of the following classes:

(1) The construction is to be the property of the Army or Navy of the United States, the United States Maritime Commission, the Panama Canal, the Coast and Geodetic Survey, the Coast Guard, the Civil Aeronautics Authority, or the Office of Scientific Research and Development.

(2) The construction consists of any building, structure or project which is used directly in the discovery, development or depletion of mineral deposits.

(3) The construction is of a type subject to the provisions of any order in the M-68 series relating to the production and distribution of petroleum. Any such construction is permitted only to the extent authorized by the applicable order in the M-68 series.

(4) The construction is residential and
  (i) the estimated cost is less than five hundred dollars; or
  (ii) is to reconstruct or restore residential construction damaged or destroyed after Dec. 31, 1941, by fire, flood, tornado, earthquake, act of God or the public enemy.

(5) The construction is agricultural and the estimated cost is less than one thousand dollars.

(6) The construction is "Other Restricted Construction" and the estimated Cost is less than five thousand dollars.

(7) The construction has been or is hereafter authorized by the Director of Priorities of the Office of Production Management or by the Director of Industry Operations by the issuance of
  (i) one of the preference rating orders or certificates listed on Schedule A attached hereto [summarized in the accompanying footnote, as that schedule may be amended from time to time, according priorities assistance to the construction; or
  (ii) an order specifically authorizing the construction.

Provided, however, that the exceptions set forth in paragraphs (b)(4)(1), (b)(5), and (b)(6) shall not be construed to authorize separate or successive construction operations the aggregate cost of which over any continuous twelve month period exceeds the amount specified in the applicable paragraph for the particular building, structure or project.

(Types of construction included under preference rating orders and certificates covered by paragraph (b) (7) (i) above are as follows: Shipyards and shipways (P-14-a, P-14-b); buildings, structures and projects important to the war effort and essential civilian needs, other than housing (for which preference rating orders P-19 and P-19-a have been issued or for which orders P-19-h or P-19-i may be issued hereafter—no further P-19 or P-19-a being accepted); public roads (P-19-e); air-transport facilities (P-41); certain types of utilities (P-46); privately financed defense housing (P-55); petroleum enterprises as defined in M-68 (P-98); remodeling of houses in defense areas (P-110); and expansion of canning plants (P-115). Also covered are certificates (P-D-3 and P-D-3A) and projects to be owned by the Army, Navy and certain governmental agencies).

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Construction machinery purchases to be placed on A-1 priority basis by WPB

Order now in preparation, similar to recent truck ruling, is prompted by shortage due to demands of Army, Navy and lease-lend.

An A-1 priority rating will soon be required for purchase of a shovel or crane. The War Production Board is now preparing an order—similar to the one of last month governing sale of crawler tractors—which will forbid sale of any power shovel or crane except on such priority ratings.

This week, WPB shut down the production of medium and heavy trucks, including off-the-road vehicles, because of inability to provide tires for any more trucks. Manufacturers are given until May 31 to complete their March quotas and will be granted no further quotas. Even priority-rated orders are not exempted from this ban—only exception being trucks manufactured for the account of the United States or a lend-lease government.

Thus tractors, trucks, cranes, and shovels—the four basic tools of the construction contractor—are now subject to extremely rigid controls. This is evidence of a developing shortage of construction equipment which is expected to become extremely critical before the Spring is over. And this problem now is a major preoccupation of the new construction machinery branch of WPB.

Only 15 percent to contractors

Fundamental cause of the shortage is the fact that only about 15 percent of the output of the equipment industry is moving into the hands of construction contractors. The remaining 85 percent is going to equip Army and Navy engineer regiments or is shipped abroad under lend-lease.

The foreign and military orders have to be filled, and there are neither tools nor material available to increase the output of equipment. At the same time construction equipment is wearing out faster than ever before under the stress of rush jobs, and the demand for equipment is reflecting a construction schedule some 40 percent ahead of last year.

To avoid this impasse, reliance is being placed on closer control over the use of equipment already in existence—particularly in putting equipment now idle into war jobs.

One simple, if brutal, device to achieve this is to withhold priority ratings from contractors needing equipment—even from contractors on Army jobs. (The project ratings granted such contractors do not cover purchases of equipment—they must apply for separate ratings on such purchases.) This forces the contractor to scour the backroads for equipment, locating machines that might not be used otherwise. Contractors are already hauling used equipment as far as from Texas to the east coast.

Preparing price ceiling

To prevent this procedure from pushing prices out of sight, the Office of Price Administration is readying a ceiling on used equipment prices at about the levels set out in the "Green Book" of the associated equipment distributors (*ENR*, April 9, p. 57). The Corps of Engineers, meanwhile, is making up its mind whether to recognize this rate as standard for non contractor-owned equipment, rather than use competitive bidding as at present.

Another approach to the problem under consideration is to increase the amount of equipment which is subject to complete control because it is government owned. The recapture clause by which the Corps of Engineers can buy any equipment used on a job by paying the difference between total rentals and depreciated value was dropped from contracts last September, as regards contractor-owned equipment. Plans are now being studied to reinstate this clause—at least as regards any equipment bought on priority ratings.

Recapture of equipment is a sore subject to contractors—who feel that the tools of their trade are being taken away from them—but it does give the Army assurance that what equipment there is will be used on its projects.

Final possibility is actual requisitioning. This is definitely on the way. It will be applied particularly to the stocks of equipment owned by States, Counties, and other local governmental agencies—stocks which cannot be reached by either of the other procedures. WPB is now conducting a survey of such stocks and will soon move to get machines.

The construction machinery branch, which has the job of dealing with this situation, is headed by Joseph F. Ryan, Chicago management engineer with William Parrish of International Harvester as deputy. A track-laying tractor section is headed by John Mohler, of Caterpillar. George Cherry, of American Bosch Corp., heads the engine section, Paul Newton of Austin-Western Road Machinery Co. deals with excavating equipment, and Tom McNutt of J. D. Adams Co. has charge of miscellaneous construction equipment.

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Start action to clear way for Kentucky levee work

First property condemnation suit of about 80 expected was filed last week at Newport, Ky., to clear the way for a $2,200,000 flood wall and levee construction job. A $350,000 bond issue approved by Newport voters last November will be used to purchase necessary right-of-way, as well as for construction of sewers.

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Waterworks test speedy

In tests staged recently under simulated air raid bombing conditions, repair crews of the Charlotte, N. C., city water department reached the scene of damage, stopped the flow of water and began repair work within 20 minutes.

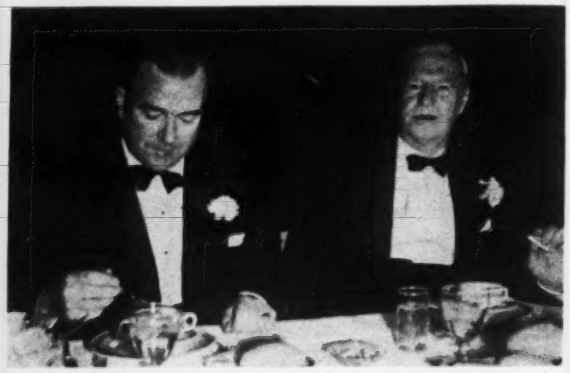
African strategic road built with American Equipment

American construction equipment is being used to build defense roads in remote parts of the world. Here shown is a LeTourneau "Carry-all" working on reconstruction of the coastal highway from Capetown to Durban, South Africa. The road is 775 miles long.

MEN AT WORK

The problem of protecting water works during the war emergency was the subject of a three day study course conducted by the Rocky Mountain (Colo.) Section of the American Water Works Association. Attending the course were: Left to right: O. J. RIPPLE, filtration superintendent of the Denver Water Board; D. P. PORTER, Chairman of the Rocky Mountain Section; BENJAMIN V. HOWE, sanitary engineer for the Colorado Department of Health.

Left: A veteran in the field of sanitary engineering—JOHN R. DOWNES, supervising engineer of the Plainfield (N. J.) Joint Sewage Disposal Works—takes the rostrum for his 27th annual appearance before the recent meeting of the New Jersey Sewage Works Association.



R. V. (DICK) HYLAND (left) of Madigan Hyland and BRIG. GEN. T. M. ROBINS, assistant to the chief of engineers U. S. Army, are pictured at the recent annual award dinner of the Moles in New York City, where honors for outstanding achievement went to M. J. Madigan, Hyland's partner and to E. A. Prentis of Spencer, White & Prentis, Inc.

Right: New gavel-wielder for the New Jersey Sewage Works Association, HENRY VAN DER VLEIT, superintendent of sewers at Maywood (left), is escorted to the rostrum by retiring president. SAM R. PROBASCO, city engineer of Burlington, N. J.

Below: Busy engineers find time to relax at the "Old Timers Buffet Supper" at the American Road Builders Association meeting in Memphis, recently. At this table, left to right, are CHARLES M. UPHAM, engineer-director of the association; GILBERT W. HAGGART, president, Haggart Construction Co.; ROBERT B. BROOKS, member of the Missouri Highway Commission; and HAL G. SOURS, director of the Ohio Department of Highways, retiring president of the association.

Municipal water distribution problems, war time version, on opposite sides of San Francisco Bay are here being discussed by two key men of the systems involved. JOHN S. LONGWELL (left), chief engineer and general manager, East Bay Municipal Utility District, is doing the figuring for GEORGE W. PRACY, superintendent, San Francisco Water Department. What these chaps know about emergency water services to naval bases, shipyards and other industrial plants are strictly military secrets!

Consider construction wage stabilization

The trend toward stabilization of construction wage rates first noted in declarations by the various local building trades councils when they proposed not to ask for wage increases this year—(*ENR*, April 2, p. 9) has become evident nationally. It may possibly result in incorporation of a wage stabilization clause into the government-union agreement known as the construction labor stabilization agreement.

Although no formal proposals have yet been made, the building trades department has suggested informally to government and employer spokesmen the possibility that construction wage rates might be frozen at the levels set in 1941 contracts—except in areas where union rates were not in effect last year. The proposal is still in the talk stage. It is not even certain that all the component unions of the department would be prepared to go along. But the proposal is taken seriously.

Actually, unless the construction wage plan moves fast, it is likely to be absorbed in the much broader overall wage stabilization plan now in the works for all labor. For months the President has been trying to get the AFL and CIO to agree not to ask for more wage increases. This has been unsuccessful—partly because the unions were able to point to the rapidly rising cost of living. The present program to freeze all prices—probably to be put into effect May 1—will unquestionably be followed by a strong and probably successful drive to stabilize all wages.

Meanwhile, the construction wage move appears likely to come to a head in connection with the present wage dispute in the Detroit area—the first major wage question that has arisen this year. Employers and employees have asked the members of the appeals board set up under the stabilization agreement to arbitrate the dispute. Hearings on this matter have tentatively been set for next week. The positions taken by the disputants and the decision of the arbitrators are likely to set a precedent for the industry.

Quebec plans no change

In Canada, the Quebec government has no intention of changing existing labor legislation despite pressure of the war, a government spokesman said last week. The minimum wage board, the joint committees operating under the collective labor agreements act, and the workmen's compensation board will continue to function normally.

It was explained that while the federal government at Ottawa might put ceilings on wages, such action would not affect the jurisdiction of the provincial governments over labor matters. The spokesman said, on the contrary, that Ottawa's orders would render more imperative than ever the control of the provincial administrations over wages and working conditions. If that control did not exist, he said, violations or orders on wages and working conditions would multiply and the situation would retrogress.

Construction costs reach record peak

Under the tremendous pressure of an expanding urgently-needed war industry, costs in the American construction field in 1941 reached the highest annual average on record, the Annual Construction Costs issue of ENGINEERING NEWS-RECORD scheduled to appear April 23, will show. The comprehensive survey indicates, however, that the spurt in costs is not alarming in view of similar rises in other fields of industrial activity.

Construction volume also was record-breaking, reaching $5,568,699,000 for the year.

Construction costs as outlined in the issue, averaged 257.84 for 1941, a gain of 2½ percent over the previous peak in 1920. The year's top index value of 266.16 for December, 1941, however, was below the all-time high of 273.80 recorded in June, 1920.

Responsible for the rise in costs were increased labor rates and higher lumber prices as visible factors. The common labor component of the index climbed 8 percent, and lumber 11 percent during the year. Cement and steel, the other component of the index, remained unchanged throughout the year.

Other factors contributing to the cost rise included shortages of skilled labor in some areas that necessitated hiring men who did not measure up to the standard efficiency; the speed of the defense program that increased the necessity for overtime work; and longer hauls for materials; and delays in deliveries.

The survey, which is carried through to April of 1942, shows that construction costs are continuing upward, having reached 271.78 in April. Further increases in labor and lumber were responsible for the gain in the first three months, and cement, which recorded the first change in its material price in January, 1938, also contributed. Structural steel remained at its 1941 level.

In a general forecast, the survey anticipates no great materials cost changes for the remainder of the year, but construction labor is due for increases in those areas of the nation where war production activities are booming.

WPB setting up construction bureau

A new construction bureau is now in the process of being set up in the production division of the War Production Board, and is expected to absorb nearly all WPB functions having to do with construction. This would include administration of the new stop order and can logically be expected to go beyond that to the general question of assignment of ratings to construction projects, and seeing that no excessive amounts of materials go into construction, either through building non-essential structures or wasteful design of structures that are to be built.

Heading the new bureau is W. V. Kahler, who has been in charge of the small construction unit of WPB's production division. This unit has been a trouble-shooting and expediting organization helping to push along war construction jobs—particularly jobs such as munitions plants for war producers, in which no direct contractual relation exists between the construction contractor and the engineering agencies of the government. This job of pushing along the war jobs will continue in the new bureau, coupled with the new job of holding down non-war construction.

Formation of the new bureau, which has been under discussion for months, is what is behind rumors current in the industry of the appointment of a "czar of construction." In a sense, Kahler is such a czar, but he is not the man to attempt a wholesale regimentation of the industry. His whole conception, observers agree, is to leave the prime responsibility for getting the job done to the contractor. Only if the contractor fails, or calls for help, does Kahler consider he ought to step in.

Nevertheless, growing shortages of material, equipment, and perhaps manpower may well become critical this year and force Kahler to move toward fairly rigid programming of war construction rather than simple trouble shooting. Moreover, there are many men in WPB who feel that the industry has already reached the stage where more regimentation is necessary. If those who hold to this philosophy come to the fore, the new bureau will provide a central place in which to do the job.

Shortage of power reported in Canada

Shortages of power are developing in Canada, according to reports originating in Washington, which state that Canada, the chief source of newsprint paper for this country, cannot continue to supply newsprint at the current rate without curtailment of the output of basic war metals like aluminum and magnesium. Before the war, production of paper took nearly 40 percent of the water power produced in Canada. Power shortages are said to be acute in Quebec and Ontario.

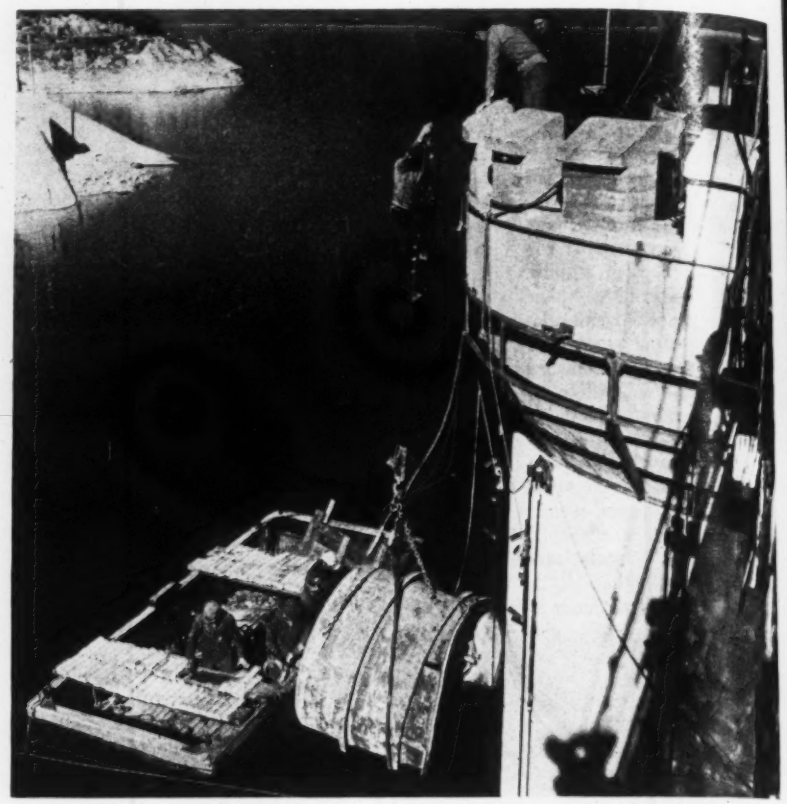
The fact that this report originated in Washington, rather than in Canada, and its inclusion of a statement to the effect that the reported shortage may cause an early decision on the St. Lawrence development, is believed by some to indicate that it may have been inspired by proponents of the St. Lawrence power and navigation project.

According to the annual report just issued by the Dominion Water and Power Bureau, Canada added 254,600 hp. of new water-power capacity in 1941 and should have an additional 650,000 hp. by the middle of next year. This power is chiefly in Ontario and Quebec.

In eastern Quebec, the Aluminum Company of Canada has just put the first of two 65,000 hp. units into service at its Chute-a-Caron plant on the Saguenay River and will bring the second unit into service in the near future. These are temporary installations to provide added power for aluminum production at the great Arvida plant while an over-all development between the Chute-a-Caron dam and tidewater is under construction. This development, known as the Shipshaw project will have an initial installation of 510,000 hp. and an ultimate capacity of about 1,000,000 hp. The first units at Shipshaw will be in service in February 1943.

On the St. Lawrence above Montreal the Beauharnois Light, Heat & Power Co. added three new 53,000 hp. units during 1941, bringing the installation there to 689,000 hp., making it the largest in Canada. Its ultimate capacity is 2,000,000 hp.

In Ontario the Ontario Hydro Electric Power Commission is building a second plant at DeCew Fall on the Welland Canal containing a single 65,000 hp. unit which is expected to be in service in July, 1943. The commission expects to be able to divert additional water into the St. Lawrence system through the Ogoki River diversion (*ENR*, April 24, 1941, p. 599) early in 1943, which will be of value to the war effort chiefly in the added power the water will produce in the Welland and Niagara plants. By agreement with the United States the Ontario commission has increased its diversion at Niagara by 14,000 cfs.



Suction type caisson expedites work under water

A suction type caisson chamber whose operating principle is similar to that of an "abalone", was used to simplify construction operations under 35 ft. of water while workmen enlarged the gate openings in the outlet tower of the lower San Fernando Reservoir, a part of the Los Angeles, Calif. water supply system.

Attached to the flange of the 7-ft. dia. steel caisson was a wide rim of gum rubber, held in place against the outside tower wall by a rubber tube placed in the angle of the rim and inflated by water pressure, thus creating a water-tight seal. The caisson was weighted with about 5,000 lbs. of lead bars to offset its natural buoyancy and keep it at the desired depth for drilling.

The tower was then dewatered and workmen proceeded to cut through the 42 in. thick concrete wall to enlarge the gate openings from 24 to 36 in. The caisson was lowered to the desired depth to complete nine holes.

Upper Missouri Engineer office shifted

The Upper Missouri division office of the Corps of Engineers, long located at Kansas City, Mo., will be moved immediately to Omaha, Nebr. The move is designed to simplify administration with the Seventh Corps area headquarters in Omaha. The division's office personnel includes about 100 engineers, 50 women office employees, and about 100 others in administrative jobs.

The Kansas City district engineer's office, with Lieut. Col. Frank Oxx in command, will remain in Kansas City.

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Protesting housing law

The Mexican Employers Association has filed protests with officials of Mexico City against a recently enacted law which requires that all employers in the Federal District, who have in their service more than 100 workers, must build and maintain model homes. John B. Latapi, president of the Association, has informed the municipal government that employers lack funds to comply.

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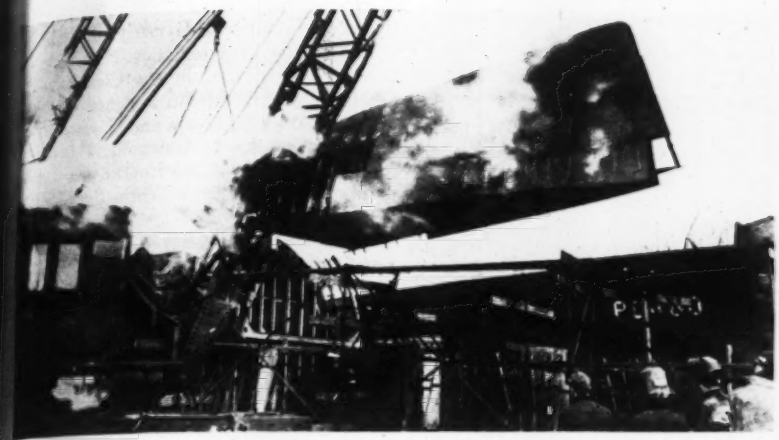
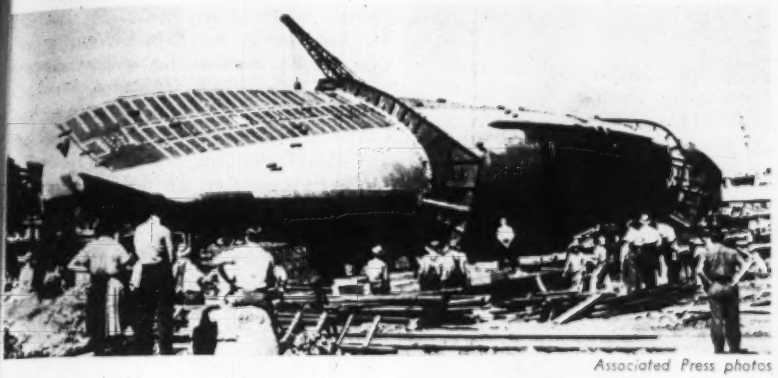
Pick jury for Steel Institute competition

The American Institute of Steel Construction has announced the appointment of a five-man jury to select the most beautiful steel bridges built during 1941 in an annual contest.

Jurymen are: Prof. Harold E. Wessman, of the Department of Civil Engineering, New York University; Prof. Carlton T. Bishop, of the School of Engineering, Yale University; Grosvenor Atterbury and Frederick J. Woodbridge, New York City architects, and Kenneth Reid, editor of "Pencil Points."





Associated Press photos

Ships built upside down to speed output

One of the many innovations introduced by American engineering ingenuity to speed war production is the construction of smaller type naval vessels "upside down." Construction in this manner, now in progress at several shipyards permits prefabrication of many of the parts, and makes for easier assembly. At top, a crane in the yards of the DeFoe Shipbuilding Co. at Bay City, Mich., swings the prow section of a hull into place. Below, with its hull completed, a ship is being rolled over—in its cradle—into an upright position.

BRIEF NEWS

CANADIAN producers of chain link fencing have been ordered to cease production after April 30, by T. B. Kilborn, Dominion Steel Controller. Fabricators are prohibited from making sales after May 31.

GOVERNOR Arthur H. James, of Pennsylvania, has signed a bill suspending for the period of present hostilities and for one year thereafter the requirement that all municipal traffic signals, electrically-operated, are to be placed on corner standards instead of suspended as overhead traffic lights. Many Pennsylvania municipalities could not make the changes because of shortages of material.

LOOKING to the post-war establishment of a governmental center, the Florida State Road Department has purchased a solid block of property directly across the street from the capitol building in Tallahassee. Governor Holland, commenting on the purchase, emphasized that no immediate construction was planned, but said that the purchase would contribute to future beauty and utility of the capitol center.

THE Mexican National Irrigation Commission has been put upon a better mobile basis with the announced acquisition of $310,000 worth of automobiles, trucks and other vehicles. The commission—many of whose activities will be given in detail in an article to appear in the April 23 issue of ENGINEERING NEWS-RECORD, written by A. N. Carter, assistant editor, who recently completed a tour of that nation—has added a new department to launch a program for increasing agricultural and industrial production as a war emergency measure.

PENNSYLVANIA'S Department of Highways will need about 28,000,000 gallons of tar and asphalt for road improvements work during the coming season.

Many localities hit by floods as streams rise

Swollen by unusually heavy rainfalls, rivers and their tributaries in many places in the United States rose to flood stages last week, leaving their banks and in some cases causing considerable damage.

The Trinity River, near Dallas, Texas, broke over its banks late in the week and completely disrupted traffic on highways in Dallas County for more than a day. Some city streets were badly washed out, and damage to county farmland was considered great.

At Elko, Nev., the Humboldt River reached its highest stage in 32 years, flooding lands in the southern portion of the town. Residents near the river were evacuated from their homes.

Chartier and Turtle creeks, above Pittsburgh, Pa., went on rampages flooding a large part of the towns of Carnegie and East Pittsburgh. In Carnegie approximately 150 families were forced to leave their homes for a time. In Pittsburgh itself, some residential cellars were inundated, but there was little other damage.

Lowlands adjacent to both the Olentangy and Scioto rivers, north of Columbus, Ohio, and lowlands south of Columbus near the Scioto were flooded after the fall of an inch and a half of rain in 24 hours. Schools in Chauncey, Rome and Trimble townships were closed because buses were unable to get through their routes. The Hocking River, near Athens, Ohio, was at a 17-ft. stage, and its waters covered parts of various highways.

Rains of more than 6 in. in 48 hours in some sections sent streams in northern Mississippi out of their banks, flooding lowlands and disrupting traffic and communications. An emergency spillway was cut in the $5,000,000 Arkabutla Dam where the flooded Coldwater River had risen 7 ft.

Rains during March were only a little below normal in the Tennessee Valley. Present prospects are that the Hiwassee Reservoir will fill completely and that the Chatuge, Nottely and Cherokee reservoirs will reach satisfactory levels. Storage in the latter three reservoirs was started during the past winter after a rush construction period.

On April 1 Norris Reservoir stood at El. 994 providing 740,000 acre-ft. of usable storage. At the dam crest (El. 1020) 1,500,000 acre-ft. of usable water can be provided and a maximum controlled storage of 2,020,000 acre-ft. is available at the top of gates, El. 1034.

Watts Bar Reservoir on the Tennessee River, where storage was started in January, is filled to the top of the gates and other reservoirs on the main stream are substantially full.

MEN AND JOBS

A. A. Matthews, formerly office engineer at Lowry Field, Denver, Colo., has been transferred to Grand Island, Neb., to become project engineer on the construction of a defense plant there.

H. L. Hartburg, Denver engineer and former district engineer for the Great Western Sugar Co., has been promoted to the position of district superintendent. He will supervise all Colorado factories of the company.

Capt. Alden E. Spees, former U. S. Army Area engineer at Wilmington, N. C., has been transferred to Camp Butner, new army cantonment near Durham, N. C.

Roland B. Wall, former state director of the Works Progress Administration for Mississippi, has announced his candidacy for the United Statess Senate from Mississippi in the August primaries.

J. H. Whitford, of Halifax, N. S., has been named resident architect for the Dominion of Canada Department of Public Works in Nova Scotia.

Lt. Col. Helmer Swenholt, Omaha district engineer, has been promoted to the rank of colonel and will be transferred soon to Washington, D. C., to command an Engineer regiment. Succeeding Colonel Swenholt at Omaha is **Col. Lewis A. Pick,** formerly assistant division engineer of the Ohio river division at Cincinnati.

John Orr has been named superintendent of the waterworks in the village of Baltimore, Ohio, succeeding **Victor J. Welde,** who recently took a post as assistant waterworks superintendent at Sandusky.

Robert Wiseman, Jr., of Tullos, La., recently was called to active service with the Corps of Engineers at New Orleans.

Thomas R. Wolfe, of Albermarle, N. C., state highway commissioner for District 7, has been made lieutenant colonel in the U. S. Army and placed in charge of maintenance of all motorized equipment and transportation in the Fourth Corps Area.

Joe Danberger, junior resident engineer for the South Dakota State Highway Commission, has joined the Corps of Engineers.

M. Neil Petty, manager of the filter plant at Gaffney, S. C., for the past nine years, has enlisted as a machinist's mate in the U. S. Navy. **H. G. Marquis** of Fort Jackson, S. C., has been appointed to succeed Mr. Petty.

A. A. Lyons, resident engineer at Humboldt, Iowa, for the Iowa Highway Commission, has resigned to join the Green Construction Co., Des Moines.

Antonio C. Kayanan, a native of Bataan Peninsula, P. I., and a graduate engineer of the University of the Philippines, has been appointed assistant city planner for the Regional Plan Assosciation of Cleveland, Ohio.

A. O. Neiser, Flemingsburg, Ky., has been appointed Flemingsburg district engineer by the Kentucky State Highway Department.

J. W. Walker and **Ronald G. Archer** are on leave of absence from the Works Department of the City of Toronto, Canada, to aid the Works and Buildings branch of the Royal Canadian Air Force.

C. W. Rounds, resident engineer with the South Dakota State Highway Commission at Lake Andes, S. D., has resigned to join the Corps of Engineers.

A. E. K. Bunnell, a partner in the consulting engineering firm of Wilson and Bunnell, Toronto, is director of public utility services in the Wartime Prices and Trade Board.

Burwell Bantz Washington state highway department director announces that **O. R. Dinsmore,** formerly office engineer, has been named to replace James A. Davis, resigned, and **J. Webb Hoover** has been appointed to replace Dinsmore.

Joe Abernathi, project engineer for the Works Projects Administration at Sioux Falls, S. D., has resigned to join the Corps of Engineers at Rapid City.

R. A. Walker, of Kansas City, Mo., is now engineer for a sewer improvement project under way at Rogers, Ark.

Roy O. Papenthien, Milwaukee architect, has been appointed to the Corps of Engineers, as an architectural engineer in foreign service.

Andy W. Potter, engineer with the South Dakota State Highway Commission since 1935, has resigned to join the Corps of Engineers.

Blake R. Van Leer, dean of the North Carolina State College School of Engineering, has been appointed director of the college's Engineering station at Raleigh. **James Fontaine** has been appointed to serve as assistant director of the station.

George G. Hayden, formerly with the Portland Cement Association, New York, is now a lieutenant in the Civil Engineering Corps, U.S.N.R., assigned to the Department of Buildings and Grounds at the Naval Academy, Annapolis, Md. Before joining the P.C.A., Lt. Hayden was employed by the New York Board of Water Supply.

Capt. John H. Anderson, resident army engineer in charge of construction of a defense plant at Fort Worth, Tex., has been promoted to the rank of major, and transferred to Baltimore, Md. **Capt. George Bock,** a member of the Constructing Quartermaster's staff at Fort Sill, Okla., has been appointed to replace Maj. Anderson.

Lt. Col. Lewis M. Van Gieson, area engineer and construction quartermaster at the Ohio River Ordnance Works, Henderson, Ky., has been transferred to Grand Island, Neb. **Maj. R. E. Smith** and **Maj. Davis Shryer,** both of Henderson, will supervise the ordnance plant work.

Frank K. Evans, Branch County, Mich., road engineer, has been granted a leave of absence to join the Corps of Engineers. **Nelson Nye** will act as superintendent of the road system in his absence.

Horace Roberts, recently manager of the Falls Creek Falls Area, National Park Service, near Pikeville, Tenn., has become assistant engineer with the Civil Aeronautics Administration at Fort Worth, Texas.

James S. Burch, engineer of statistics and planning for the North Carolina State Highway and Public Works Commission, at Raleigh, N. C., has been appointed chief warden of the Civilian Defense Corps of the state.

Chester F. Lewis, city manager of Morgantown, N. C., has taken a leave of absence to join the Corps of Engineers at Wilmington, N. C.

D. P. DeBord, district manager of the WPA Omaha district, and **Harry C. Cusack,** operations supervisor, have resigned to take engineering positions at the Nebraska Ordnance plant.

J. G. Smith, engineer for the Wyoming state highway department at Cheyenne, has resigned to accept a position with the A. H. Read Co., Cheyenne contracting firm.

Maj. R. E. M. DesIslets, Army engineer in charge of construction of cantonments in Oregon, and resident engineer at Bonneville Dam, has been promoted to the rank of lieutenant-colonel.

Use of reinforcing steel cut on war public works

Steel bars used in reinforcing concrete in war public works construction may now be used only where use of more concrete will not serve the purpose, according to a new order issued by Col. William N. Carey, chief engineer of the Federal Works Agency. The order was issued to delineate further restrictions on the use of critical materials. (*ENR*, April 2, and Mar. 26, p. 517, 461).

"In the event reinforcing steel is absolutely necessary, the order said, the quantity should be kept at a minimum. To accomplish this, unit stresses used for reinforcing steel should be as high as is consistent with sound engineering practice. Structural steel may be used only when 'absolutely essential.' Whenever structural steel is used, full justification must be furnished as to why wood, reinforced concrete or other substitutes cannot be used. Cubic yards of concrete for both plain and reinforced concrete must be shown separately to permit a comparison of the quantity of reinforcing steel with the quantity of reinforced concrete."

The order stipulated that design of sewers and non-pressure water conduits shall be based on non-reinforced sections using tile, brick or concrete. Design of walls must be based on gravity sections where possible. If reinforced walls are necessary, the steel should be reduced and the concrete thickness at critical points should be appreciably increased.

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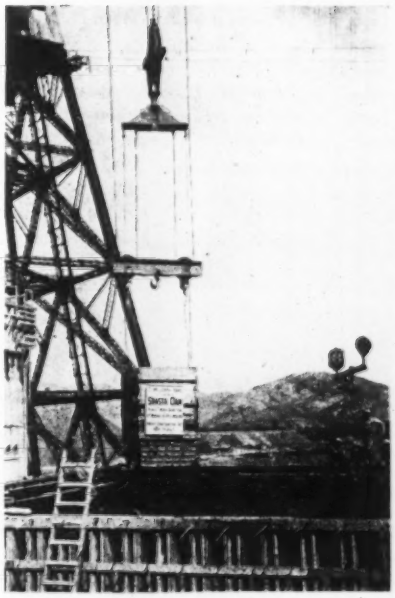
Canada cancels all steel orders made after Dec. 1

The Canadian Department of Munitions and Supplies has cancelled all orders on the books of Canadian steel producers as of Dec. 1, 1941. All orders since that time will be treated as entirely new requisitions, subject to the approval of F. B. Kilbourne, steel controller.

Explaining the order, Mr. Kilbourne said some manufacturers, in the hope of getting delivery from at least one mill, placed orders with every Canadian mill. For this reason, he said, it is impossible to determine the exact demand at this time. He estimated, however, that cancelled orders may amount to about 500,000 tons.

New instructions issued to steel fabricators provide that a copy of every renewal order and of every new order, must be sent to the steel controller's office. In order to get an order approved for the mill rolling schedule, a manufacturer must prove to the controller that the steel is required for war purposes, or for an essential need linked closely to the war.



Shasta Dam construction reaches halfway mark

The 3,000,000th cu. yd. of concrete was placed in Shasta Dam last week, bringing construction to the halfway mark.

Ralph Lowry, construction engineer, said that an outstanding concrete placement record has been made since the first concrete was poured on July 8, 1940. The one millionth yard was poured on May 3, 1941, and the second millionth yard on October 12, 1941. Although 200,000 cu. yd. of concrete are being placed each month, the 24-hr. pouring record of 11,790 yd., established Aug. 9, 1941, remains unchanged.

With the danger of floods from above the dam site greatly reduced because of the advancing season, contractors are renewing construction activities in the spillway section, by resuming concrete placement in the row of blocks adjacent to the right abutment section. Work over the entire spillway section will be continued, probably in June, when all danger of destructive flood flow is past.

Corps of Engineers sets up new division office

The Corps of Engineers is establishing a Middle Atlantic Division to relieve the heavily loaded North and South Atlantic Divisions which are charged with much of the work on Atlantic island bases.

With headquarters at Baltimore, the Middle Atlantic Division has been created by taking the Washington and Baltimore districts from the North Atlantic Division, and the Norfolk district from the South Atlantic Division.

Colonel Thomas F. Farrell, who has been in the chief engineer's office will be division engineer.

British plan post-war construction program

The British Ministry of Works and Buildings recently announced to organization of a Directorate of Post-War Building, in a long-range plan for a future construction program.

Employing a skeleton staff of 14 people, the directorate has already started work on designs, structures and installations. Subcommittees dealing with materials, timber and reinforced concrete construction, paints, plastics, plumbing, electrical installations, etc., have also been set up to facilitate the work.

Another evidence of British thinking in terms of post-war is the announcement by the British Cement and Concrete Association of a scheme for erecting two-storied war-time dwelling houses, which might be converted later to peace-time standards.

The plan involves minimum living and sleeping accommodations, and a high degree of standardization, especially in staircases, plumbing and other expensive parts. To avoid waste of time by laborers waiting on the completion of preceding work, crosswalls and floors would be constructed in one operation in reinforced concrete rather than in brick, while non-weight-bearing walls would be erected separately and at a later date.

Conversion work after the war would include enlarging of window openings, removing and rebuilding some partitions, and application of a better interior finish.

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Plan utilizing rear alley spaces for car parking

Utilization of alley space behind store buildings in its 30-block business district as parking space for automobiles, is planned by Beverly Hills, Calif., as a solution for traffic congestion.

An "ordinance of intention" has been passed as the first step in the program. If no objection has been filed within 30 days, a bond-sale ordinance will be proposed.

Under the plan, parking areas will be laid out in the center of a business district alley, which will be widened by use of "back lot" space between the alleyway and the rear of buildings. Location of the parking stalls in the center of the alley will leave room on each side for operation of supply and delivery trucks. Each parking area will accommodate approximately 60 cars.

The action is being taken under a state law passed last year, enabling 25 percent of the property owners of any community to set up a parking district to construct parking areas, financing them through a bond issue. The bonds are limited to 20 percent of the assessed valuation for each parcel of real estate.

State can curtail highway access rights

The Louisiana Supreme Court in a recent decision upheld a district court ruling affirming the right of the state to exercise "reasonable limitations" over the number of access connections to its superhighways.

The case grew out of an attempt by property owners to make 45 entrances into the Jefferson highway near the Mississippi River bridge above New Orleans. The district court reduced the number of access roads to ten. W. Prescott Foster, director of the State Highway Department, said the supreme court decision gave power to state authorities to prevent main highways from being crossed in a manner that might interfere with through traffic.

Colorado schedules many road construction jobs

Despite drastic curtailment of new highway construction as a result of the demands of war industry, Colorado will complete a considerable amount of construction during 1942, Charles D. Vail, state highway engineer, said in announcing that 33 contracts, calling for total expenditure of $3,823,204 are now under way.

The work includes 67.9 miles of new highways, 37 bridges, 9 overpasses and underpasses, two pioneer tunnels and 8.5 miles of shoulder oiling. Not included in Mr. Vail's tabulation were anticipated projects to build military access roads and a proposed $500,000 improvement in the Uravan mining district, which would be undertaken with federal funds as a part of the war effort.

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Safety record set by Corps of Engineers

During the calendar year 1941, the Corps of Engineers established an accident frequency rate 26 percent lower than that for private construction as a whole, and a severity rate 41 percent below that of the private construction industry, according to the corps' safety section. These reductions represented a saving of 206 lives, the prevention of 8,560 injuries and the saving of $11,232,000 in wages to workers.

The accident prevention system of the corps is believed to be the most extensive ever applied to a single construction program. During the period covered by the figures, the exposure to accident was nearly one billion man-hours and involved a working force of approximately 600,000 employees. A detailed analysis of 12,395 lost-time injuries sustained by employees of contractors on the Army emergency construction program during 1941 revealed that nearly one-half of the injuries sustained were bruises and abrasions, with strains of various types second, and fractures third. More than one-third of the accidents involved the legs, with the torso second and arm injuries third. The study indicated that one in every five accidents resulted from falling or flying objects. A tabulation of the injury statistics showed that of the total 130 resulted in death; four in permanent total disability; 200 in permanent partial disability and 12,061 in temporary or lost-time disability.

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Navy gets five Coast and Geodetic Survey ships

A total of 40 commissioned officers and five ships of the U. S. Coast and Geodetic Survey have recently been transferred to the armed forces according to Rear Admiral L. O. Colbert, Director of the Survey.

Among the ships transferred are the Oceanographer, formerly the yacht Corsair, and the Hydrographer. Personnel transferred includes Comdr. Henry B. Campbell, of New York, until recently chief of the Coast Pilot Section, who was in charge of the Oceanographer; and Lt. Comdr. William M. Scaife, of Clinton, S. C., who was in command of the Hydrographer.

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Santee-Cooper system buys power properties

The South Carolina Public Service Authority, builder of the Santee-Cooper power and navigation project near Charleston, S. C., has entered into a contract to purchase from the Associated Gas & Electric Corp. its power properties in South Carolina, estimated to be worth $40,000,000.

Contract for the sale of the properties must be approved by the court having jurisdiction over the reorganization of the Associated Gas & Electric Corp. Its consummation also may be delayed by litigation challenging the powers of the authority to make such purchase.

The properties sold are the South Carolina Electric & Gas Co. and the Lexington Water Power Co. The latter owns and operates the Saluda hydro-electric power project west of Columbia, S. C. These utilities already have connections with the hydro-electric power station of the Santee-Cooper project, which went into service early this year.

War stops spending of millions for roads

The North Carolina Highway and Public Works Commission has more than $4,000,000 on hand to be spent on highway work—and apparently can't spend it.

W. Vance Baise, chief engineer, told commissioners that the $4,017,798 on hand is the unexpended portion of funds allotted by the state and federal governments for construction on the federal-aid road system, which includes the greater part of the state's highways.

Baise said he had learned that it is virtually impossible to get the War Department to certify any additional road construction in North Carolina unless the roads are of strategic or vital importance to military or naval bases. Most of the highways do not fall in that category.

Call for bids May 15 on $40,000,000 Davis Dam

The Bureau of Reclamation of the U. S. Department of the Interior has announced that it will receive bids until 10 a.m., May 15, 1942, at Kingman, Ariz., for the construction of the $40,000,000 Davis Dam and power project on the Colorado River, about 30 miles west of Kingman.

Davis Dam is located on the Colorado River about 67 miles below Boulder Dam with its reservoir extending upstream to tailwater at the Boulder plant. The dam is to be a rock and earthfill structure about 200 ft. high above the deepest excavation and creating a head of 140 ft. During construction the river is to be diverted through tunnels in the west abutment. One of these, concrete lined and 32 ft. in diameter, will contain the outlet works; the others will contain steel penstocks serving the power house. An open-chute spillway, gate controlled and concrete lined will be built through the east abutment, discharging 400 ft. below the dam. It will have a capacity of 200,000 cfs.

Five main generating units

Preliminary plans provide for a reservoir with a capacity of about 1,800,000 acre-feet, and the power plant will house five main generating units, each to consist of a 45,000 kva. vertical shaft generator with a direct connected exciter, driven by a 62,200 hp. turbine.

According to the call for bids, major quantities in the dam include: earth handling (all classes) 10,000,000 cu.yd.; rock fill, 2,200,000 cu.yd.; concrete, 450,000 cu. yd.; reinforcing steel, 7,000 tons; steel structurals, gates, cranes, 5,000 tons.

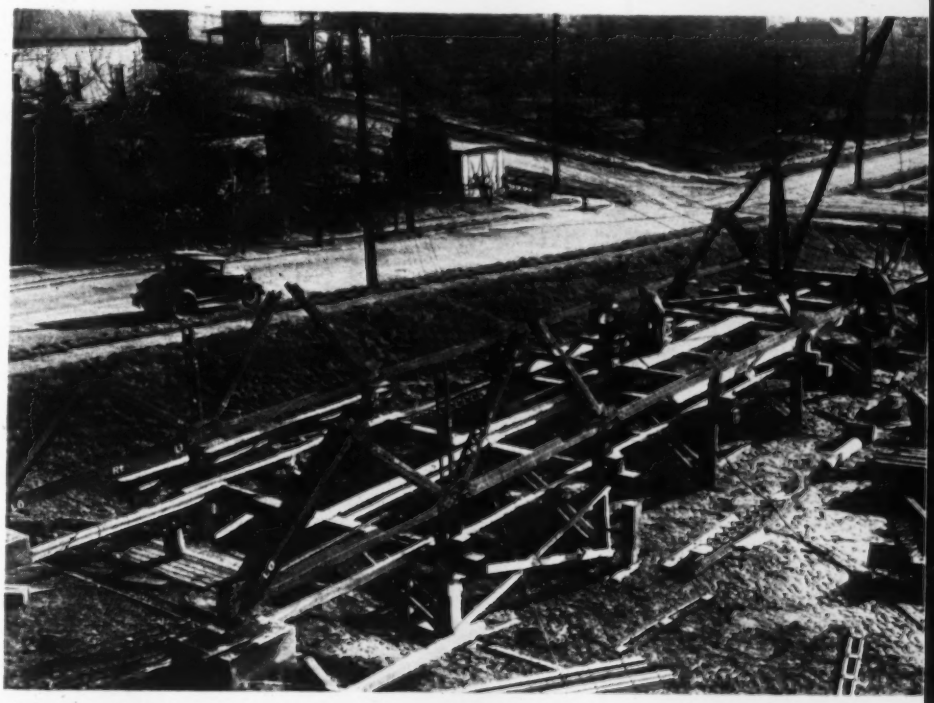
Unique school teaches construction trade

A school which includes in its equipment a full-size steel bridge, a blacksmith's forge, two small derricks, thousands of rivets, and chipping hammers, is training new construction workers at Seattle, Wash.

Operated by the Seattle public school system in an attempt to meet a great demand for skilled construction workers in the Pacific Northwest, the school is believed unique. With the cooperation of the National Defense Vocational Education program, three-month courses are given, free, to men who show aptitude for the three types of construction work taught: structural steel work, steel reinforcing, and steel finishing.

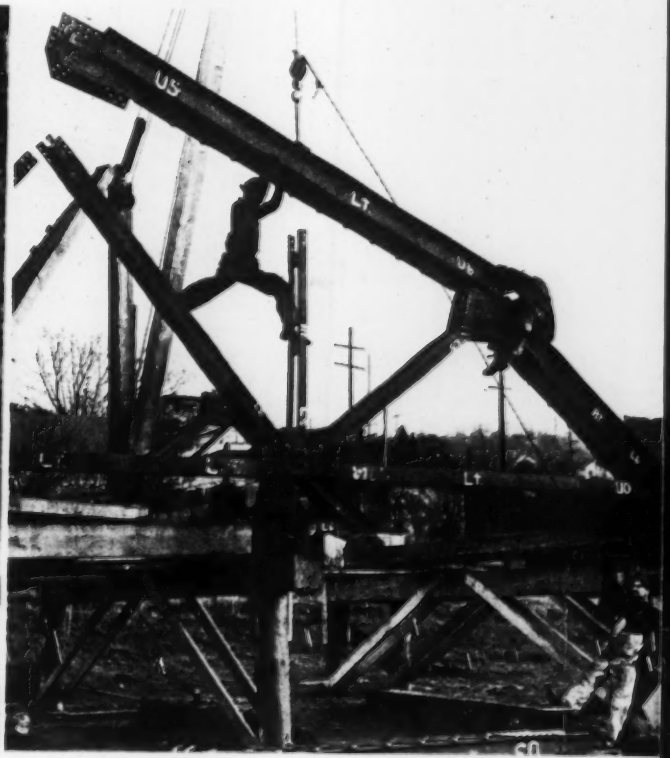
Many of the students are night-shift shipyard workers, in search of the opportunity to obtain better jobs.

Courses are conducted in an abandoned city grade school building, in whose yard an old but complete steel bridge, purchased from the state highway department, is being erected, torn down and re-erected as a practical problem for the students. Principal of the school is Arthur Macfarlane, formerly a construction foreman. He is responsible for writing a great part of the text used in the work, including mimeographed folders on splicing cables, knots and hitches and hoisting signals. Other instructors draw on their own long experience to teach the assembling of reinforcing steel, the use of derricks on construction jobs, and other phases of construction work. Use of pneumatic riveting guns and chipping hammers, and throwing and catching rivets, come under the heading of classroom work.



Unusual equipment for a school yard is an old highway bridge (above and lower right) used as a practical problem, in training new skilled steel workers in the Northwest.

Principal Arthur Macfarlane (right) shows a student the proper method of hitching a hoisting cable to a steel beam.



Olds asks more waterpower facilities

Citing the possibility that increasing demands on transportation facilities might reduce the fuel supply available for steam power plants and cause serious interruption of power production, Leland Olds, chairman of the Federal Power Commission, told members of the Midwest Power Conference at Chicago last week that development of additional hydro-electric power must go ahead as "an essential part" of the war effort.

Speaking on "power planning," Mr. Olds stressed the fact that the planning of generating capacity for war cannot wait until specific demands for power develop, and estimated that 150 billion kwh. annually would be required to supply America's war industries when they reach full swing.

"Now that we are at war," Mr. Olds said, "we cannot afford to wait until 1945 or 1946 to meet a program involving war expenditures at the rate of from $50,000,000,000 to $60,000,000,000 a year. We face annual energy requirements of about 150,000,000,000 kwh. for the war program, including direct and indirect war production as well as war service needs.

"For purposes of comparison we may recall that for the year 1939 the production of electric energy for public use was only 130,000,000,000 kw.-hr. Assuming that war production will displace about half of the industrial production of that year for civilian purposes, there still remains the problem of making sure that by the time the war program is in full swing it can command about 125,000,000,000 kw.-hr. over and above those produced in 1939."

He said the St. Lawrence power project, projects on the Ohio River tributaries in Pennsylvania, the Clark Hill project in Georgia and the group of projects on the Arkansas and White Rivers in Arkansas, in general can be constructed in comparable time with that required for the installation of equivalent steam capacity.

"It is certain that multiplication of steam generating capacity will face increasing problems of fuel supply," he stated. "This will be due not only to increasing demands for the various fuels but probably even more to increasing pressure on the country's transportation systems. If the war should prove long, the more water power that can be brought into the program, the less danger there will be of serious interference with production."

The FPC chairman termed the recent annual statement by C. W. Kellogg, president of the Edison Electric Institute, an "extremely misleading report," which indicated "a generous paper surplus of generating capacity to carry the war load." Such figures as Mr. Kellogg offered, used as a basis for planning power supply for war needs, would prove disastrous, Mr. Olds said.

Pointing out that the use of electricity corresponding with the 1941 defense expenditures of $12,531,000,000 was actually about 25,000,000,000 kw.-hr.—or about 3½ times Mr. Kellogg's figure of slightly over 7,000,000,000 kw.-hr.— Mr. Olds said that the Edison chief's figure actually represented estimates of probable 1941 defense power requirements, supplied to the FPC in the winter of 1940 and spring of 1941 for the production of finished materials for the U. S. Government. "The estimates, in general, leave out the much greater requirements of the industries producing raw materials, such as aluminum, magnesium, steel alloys, etc. Mr. Kellogg's ratio would result in an estimate of approximately 33,500,000,000 kw.-hr. for the entire $56,000,000,000 war program," Mr. Olds added. "Actually, the production of aluminum and magnesium alone for that program will require more than 25,000,000,000 kw.-hr."

Ontario road official to aid Alaska Highway

The Ontario, Canada, provincial government has taken steps to grant R. M. Smith, deputy minister of highways, full authority to render whatever assistance is required to U. S. Army Engineers in the construction of the Alaska Highway. T. B. McQuesten, Minister of Highways, said that request for Mr. Smith's services had come from U. S. authorities.

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New Intracoastal Canal section opening seen

The section of the Intracoastal Canal between Galveston and Corpus Christi, Tex., a stretch of approximately 180 miles, may be opened for shallower barge traffic next month, according to the Galveston office of the Corps of Engineers. The waterway has its eastern beginning on the Mississippi River, at a point near New Orleans.

The engineering report said that final phases of construction, yet to be completed, include the erection of a removable dam across the canal east of the Brazos River and maintenance dredging to remove shoaling at various points.

Speeding the War Effort

America's war effort goes forward at an increasingly faster rate, through many agencies and in many fields. Here are some developments of the past week of special interest to the engineer and constructor:

The Great Lakes Steel Corp.'s Zug Island furnace last week claimed a world record for blast furnace production, when a tabulation showed that in the past month straight ore production was 43,478 tons and the final day's production was 1608 tons. The record was established with a consumption of less than 1,700 lb. of coke per ton of iron produced—a decrease of 5 percent in the consumption of coke.

Contractors who modernized their old tractors by substituting rubber tires for steel wheels will be forced to return to the machine's original equipment when the present tires wear out, under an order issued by the War Production Board, unless no substitute steel wheels are available in the immediate locality.

The Corps of Engineers last week began work to remove 20 miles of track of a branch line of the B&O R.R. between Confluence and Friendsville, Md., which will be flooded by the Youghiogheny Dam; the rails will go to scrap. Meanwhile, in another move to recover steel for the war effort, the Carnegie-Illinois Steel Corp. began work near Pittsburgh to recover five sunken steel barges from the bed of the Monongahela River.

A. W. Herrington, president of the Society of Automotive Engineers and of the Marmon-Herrington Co., of Indianapolis, is now in India as a technical adviser and assistant to Col. Louis Johnson, recently appointed U. S. Minister to India. Mr. Herrington, long familiar with the ways of the East, will aid in organizing the potential productive power of India for the Allied cause.

Increasing use of timber as a substitute for steel in construction of many types of structures has spurred the establishment of a school near Seattle, Wash., where men with long experience in this type of construction are offering free evening courses to engineers. "Professors" are Chester Hogue and T. K. May, of Seattle, members of the West Coast Lumbermen's Association, and J. B. Dodge, of the Northwest Bolt & Nut Company.

Engineers protest wording in bill to limit profits

The American Institute of Consulting Engineers has addressed letters to the Committee on Naval Affairs and the Committee on Military Affairs of the House of Representatives, protesting against the provision in bills H.R. 6790 and 6792 which would limit the profit of engineers to 6 percent of what it costs them to make the drawings and to cover other office expenses. The letters, signed by R. E. Bakenhus, vice president, and Philip W. Henry, secretary, point out that engineers' and architects' fees have always been figured as a percent of the project cost just as are contractors' fees.

A resolution accompanying the letters suggests adding the following sentence to the bills: "that the cost to which limitation of profit will be applied shall be the construction cost of the project on which professional or technical service is supplied," in order that architects and engineers be placed on at least as favorable a basis as contractors for construction work. The letters state that to limit profits to 6 percent of the actual cost of the design work would tend to run up costs, and would provide inadequate and unjust compensation for the engineer.

FPC orders cut in property valuation

A cut of $3,821,000 in the value of the Jordan Dam power development of the Alabama Power Co. on the Coosa River in central Alabama has been ordered by the Federal Power Commission as the result of a decision of the U. S. Court of Appeals for the District of Columbia affirming the commission's power to require adjustment in the value of waterpower plants built under license from the federal government.

The Alabama Power Co. has two hydro plants on the Coosa River, one at Mitchell Dam and one at Jordan Dam, both built under a license from the Federal Power Commission and both subject to recapture by the federal government at the end of the 50-year license period. A suit challenging the powers of the Federal Power Commission to order a similar adjustment in the value placed by the company on its properties at Mitchell Dam was decided in favor of the commission by the Court of Appeals on March 30 of this year. Acting on the strength of that decision, the Federal Power Commission has ordered the project accounts for the Jordan Dam property to be reduced from the company's claimed cost of $13,047,509 to an allowed cost of $9,190,573, the difference to be charged to capital surplus in the company's accounting.

The court held that the commission is "vested with unlimited and summary powers over the accounts of its licensees to the extent necessary to insure proper performance of its duties," in so far as regulation is concerned. The court rejected the company's contention that it had not been granted due process of law; that the commission was without authority to order the disallowed items charged to the company's surplus account; and that the commission's jurisdiction over the company's accounts is limited to those matters in which the company is not subject to regulation by the Alabama Public Service Commission.

In another action, the Commission announced reopening of proceedings on an application by the First Iowa Hydroelectric Cooperative, of Muscatine, for a license for a proposed power project on the Cedar and Mississippi Rivers. Hearings were held in Davenport,, Iowa, Jan. 12-28, 1942, and are to be resumed at 9:45 a.m., May 18, in the U. S. Customhouse, Chicago, Ill.

Reopening of the proceedings, which was requested in a petition filed by the cooperative March 28, was opposed in a protest filed April 2 by the State of Iowa on the ground that the applicant had been given sufficient opportunity to present evidence. The project would consist of a dam on the Cedar River, an 8-mile canal to divert water from a reservoir on the Cedar River to the Mississippi River at Muscatine, and a power house on the west bank of the Mississippi at Muscatine, having an initial installed capacity of 50,000 kw. The energy generated would be absorbed by the Eastern Iowa Light & Power Cooperative and the municipal electric system of the City of Muscatine.

Kentucky capitol produces cavern phenomena

Workmen renovating Kentucky's state capitol building at Frankfort recently, discovered that the state's great underground caverns are not alone in producing odd, natural phenomena. Working under the terrace at the entrance to the building, they discovered the concrete stalactites and stalagmites shown in the above picture.

F. Paul Anderson, principal materials engineer of the Department of Highways, said that the terrace was constructed about 1909, of brick laid in sand and supported by reinforced concrete slabs. Chemical analysis of the formations found shows they are approximately 99 percent pure calcium carbonate, and apparently are caused by water seeping through the slab and leeching out the soluble salts in the concrete.

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Name engineers to Canada army technical test body

An Army Technical Development Board, to develop and test new ideas for weapons and improvement of existing weapons and to allocate research and development work among various agencies, has been set up by the Canadian Department of National Defense.

Two civil engineers, C. J. Mackenzie, acting chairman of the National Research Council, and Prof. R. E. Jamieson of McGill University, now director of the Army Engineering Design Branch, have been named to the board. Board chairman is Victor Sifton, Master General of Ordnance.

OBITUARY

William F. Cummings, 54, chief engineer of the Boston & Maine Railroad, died at Marblehead, Mass., April 9. Entering the road's employ in 1906, Mr. Cummings became successively valuation engineer, assistant chief engineer, and acting chief engineer, attaining the post of chief engineer in 1939. He had been a vice president of the American Railway Engineering Association.

Arthur Brennan, 27, formerly an engineer with the U.S.E.D. at Louisville, Ky., was killed April 1 in an automobile accident near Galveston, Texas.

Herbert G. Haynes, 54, Clinton county, Ohio, engineer since 1936, died April 3 at Wilmington, Ohio.

Walter H. Myrick, Kent, Ohio, construction engineer, died at his home April 2.

L. D. Neighbors, 76, retired civil engineer of Des Arc, Ark., died April 1.

Howard Nelson Bowdry, 68, Birmingham, Ala., contractor, died April 8.

Abel B. W. Hodges, 79, geologist and mining engineer, died April 7 at Los Angeles.

Lee M. Perry, 53, of Beaverton, Mich., a veteran road contractor, died April 8 at Ann Arbor.

C. J. Head, 78, Montreal metallurgist and mining engineer, died April 8.

Sam C. Beal, 53, Siler City, N. C., road building contractor, died there April 8.

Ove Ingebrigtsen, 86, Fairhaven, Minn. building contractor, died April 6.

R. P. Morris, 80, former McDowell County, N. C., highway commissioner, died at Marion April 3.

William T. B. Barrus, 77, building contractor, died April 5 at Grantsville, Utah.

Joseph J. Walish, 79, secretary-treasurer of the Walish-Dufton Co., of Milwaukee, Wis., died April 7. His firm had been associated with many large public building projects in Milwaukee.

D. H. Kenner, Asheville, N. C., contractor, died April 8.

Harvey Vieth, secretary of the Morris Martin Co., of Berlin, Wis., and a widely known highway construction worker, died April 6.

Billboard removal cuts highway accidents

Figures compiled by the North Carolina Highway and Public Works Commission show that an ordinance requiring all billboards to be placed at least 50 ft. from the center line of highways has resulted in fewer highway fatalities on rural roads. Removal of the signs began Nov. 1.

While national automobile accident fatalities showed an increase during December and January, the commission's data show that rural highway fatalities in the state decreased in the past 4 months over the same period in preceding years. There were 106 fatal accidents in December, 1941, compared with 127 in December, 1940; 57 fatalities in January, compared with 7[illegible] January, 1941, and 41 in February, 1942, compared with 53 in February, 1941.

Meanwhile, William L. [illegible], outdoor advertising division director of the Florida State Road Department, said that his agency will begin a check of signs and billboards this week.

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Delay bridge plans

Construction of a new bridge spanning the Calcasieu River at Lake Charles, La., plans for which were nearly complete in December, 1941, probably will be delayed for several years, according to Harry W. Henderlite, chief engineer of the Louisiana State Highway Department. Shortages of materials were given as reason for the postponement.

CONTRACTS AND CAPITAL

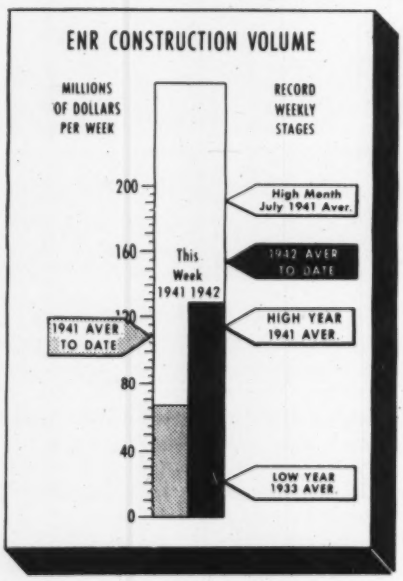
ENGINEERED CONSTRUCTION volume for the week, $148,577,000, is up 124 percent compared with the corresponding 1941 week, but is 40 percent below the high volume of a week ago. Private construction just tops last week's mark, but is 20 percent under last year. Public work declines 42 percent from the preceding week, but exceeds the 1941 week's total by 174 percent.

The current week's volume brings 1942 construction to $2,495,145,000, an increase of 44 percent over the opening 16-week period a year ago. Private construction, $227,474,000, is 52 percent lower than in the period last year. Public work, $2,267,671,000, increases 79 percent over a year ago as a result of the 138 percent gain in federal construction.

In the classified construction groups, gains over last week are in sewerage and industrial buildings. Increases over the corresponding 1941 week are in waterworks, sewerage, public buildings, and unclassified construction.

New capital for construction purposes for the week totals $3,038,000, a decrease of 35 percent from the financing volume for the week a year ago. The current week's new financing is made up of $2,688,000 in state and municipal bond sales, and $350,000 in corporate security issues.

New construction financing for the year to date, $2,435,189,000, is 6 percent higher than the $2,285,438,000 reported for the 16-week period last year.



CONTRACTS

(Thousands of dollars)

	Week Ending Apr. 17 1941	Apr. 9 1942	Apr. 16 1942
Federal	$26,427	$210,344	$127,172
State & Municipal	22,696	22,228	7,631
Total public	$49,123	$232,572	$134,803
Total private	17,185	13,772	13,774
TOTALS	$66,308	$246,344	$148,577
Cumulative 1942	(16 weeks)		$2,495,145
1941	(16 weeks)		$1,735,721

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	1941 16 weeks	Cumulative 1942 16 weeks
NON-FEDERAL	$318,553	$210,234
Corp. Securities	101,243	71,166
State & Mun.	177,689	115,769
U.S.H.A. loans	13,521	
R.F.C. loans	26,100	23,314
FEDERAL	$1,966,885	$2,224,955
TOTAL CAPITAL	$2,285,438	$2,435,189

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Apr. '42	271.78	130.64
Building Cost	Apr. '42	219.55	118.68
Volume	Mar. '42	578	253

FHA MORTGAGES

	Week Ending Apr. 12 1941	Apr. 4 1942	Apr. 11 1942
Selected for appraisal			
Title II	$33,702	$18,985	$18,916*
Title VI		$23,103	$17,504*

* Subject to revision.

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